

REMARKS

Claims 1-25 are pending in this application. By this Amendment, claims 1 and 11 are amended. Support for the amendments to claims 1 and 11 can be found in the specification as originally filed, for example, at paragraphs [0023], [0025] and [0034] and in Example 1 (paragraphs [0038]-[0041]), and in claims 1 and 11 as originally filed. Thus, no new matter is added by the amendments. In view of the foregoing amendments and the following remarks, reconsideration and allowance are respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; and (c) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Rejections Under 35 U.S.C. §102

The Office Action rejects claims 1-3, 5-13, 15-18 and 21-25 under 35 U.S.C. §102(b) over U.S. Patent 5,610,117 to Horiuchi et al.; rejects claims 1-3, 7, 8, 11-13, 15, 19, 20 and 21-23 under 35 U.S.C. §102(b) over U.S. Patent 5,155,077 to Montreuil et al.; rejects claims 1-10 under 35 U.S.C. §102(b) over U.S. Patent 5,989,457 to Seshan et al.; and rejects claims 1-5, 7, 8, 11-15, 19 and 21-23 under 35 U.S.C. §102(e) over U.S. Patent Application Publication 2002/0016259 to Yoshikawa. Applicants respectfully traverse.

Independent claim 1 sets forth a "catalyst for purifying an exhaust gas, comprising: zirconia particles; and a transition metal layer in which at least part of a transition metal is solved into said zirconia particles and which covers at least a part of a surface of said zirconia particles in a lamellar manner." Claims 2-10 depend, directly or indirectly, from claim 1 and

include all of the limitations thereof. Independent claim 11 similarly sets forth a "catalyst for purifying an exhaust gas, comprising: a co-catalyst powder including zirconia particles, and a transition metal layer which at least a part of a transition metal is solved into said zirconia particles and which covers at least a part of a surface of said zirconia particles in a lamellar manner; and at least one member selected from the group consisting of a titania powder and a zeolite powder." Claims 12-25 depend, directly or indirectly, from claim 11 and include all of the limitations thereof.

Each reference is separately cited as disclosing a catalyst composition useful for exhaust gas purification, including zirconia and a transition metal in the amounts recited in the pending claims. See Horiuchi, col. 5, lines 54-56, col. 6, lines 14-18, col. 7, lines 60-61; Montreuil, col. 2, lines 27-44; Seshan, col. 4, lines 16-28; Yoshikawa, paragraph [0017]. Horiuchi is also cited as disclosing calcining a catalyst at a temperature of 300-850°C. See Horiuchi, col. 7, lines 60-61. Montreuil is further cited as disclosing calcining a catalyst at a temperature of 300-600°C. See Montreuil, col. 2, lines 51-53. Seshan is further cited as disclosing calcining a catalyst at a temperature of up to about 800°C. See Seshan, col. 4, lines 26-28. Yoshikawa is further cited as disclosing calcining a catalyst at a temperature of 300-800°C. See Yoshikawa, paragraph [0017].

However, in contrast to claims 1 and 11, none of the cited references disclose that a part of a transition metal of a transition metal layer is solved into zirconia, as recited in claims 1 and 11. Thus, the cited references do not disclose, in discrete embodiments, a catalyst comprising: zirconia particles and a transition metal layer in which at least part of a transition metal is solved into said zirconia particles and which covers at least a part of a surface of said zirconia particles in a lamellar manner, as recited in claims 1 and 11.

Further, as discussed in the instant specification, part of a transition metal layer may be solved into zirconia by loading a salt of a transition metal onto the zirconia and calcining

the loaded zirconia at temperatures of at least 800°C in an inert gas or oxidizing gas atmosphere. See Specification, [0034]. None of the cited references disclose calcining zirconia and a transition metal salt in an inert gas or oxidizing gas atmosphere. As can be seen in Comparative Example 1 of the instant specification, alternative methods, such as calcining at 500°C in air, do not necessarily result in a transition metal solved into zirconia. Accordingly, the cited references do not disclose, either explicitly or inherently, a catalyst comprising: zirconia particles and a transition metal layer in which at least part of a transition metal is solved into said zirconia particles, as recited in claims 1 and 11.

Moreover, the cited references do not disclose the beneficial effects that can be obtained by the catalytic compositions set forth in claims 1 and 11. For example, when a part of the transition metal is solved into the zirconia, the oxidizing activity of the transition metal is suppressed. See Specification, paragraphs [0023], [0025], [0034]. By suppressing the oxidizing activity of the transition metal, the oxidation of SO₂, and the generation of sulfates, can be inhibited. See Specification, paragraph [0023], [0025], [0034]. In addition, HC and SOF purifying rates can be improved, and particulate materials can be efficiently purified. See Specification, paragraph [0024].

Thus, Applicants respectfully submit that claims 1-25 are patentable over Horiuchi, Montreuil, Seshan and Yoshikawa. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-25 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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